

CLAIMS

What is claimed is:

1. A method for locating a fluid leak in a fuel cell stack, the method comprising:
 - a) pressurizing a first fluid stream passage with a tracer fluid;
 - b) introducing a flow fluid to a second fluid stream passage;
 - c) maintaining a substantially constant flow of the flow fluid through the second fluid stream passage toward an exit point of the fuel cell stack;
 - d) inserting a probe, adapted to monitor for the presence of the tracer fluid in the flow fluid, into the exit point;
 - e) moving the probe through the second fluid stream passage; and
 - f) monitoring for the presence of the tracer fluid in the flow fluid at various locations of the second fluid stream passage.
2. The method of claim 1, wherein the tracer fluid is helium.
3. The method of claim 1, wherein the flow fluid is air.
4. The method of claim 1 wherein:
 - a) the fuel cell stack comprises a plurality of fuel cell assemblies;
 - b) the probe is moved through the second fluid stream passage one fuel cell assembly at a time; and
 - c) the presence of the tracer fluid in the flow fluid is monitored at each fuel cell assembly.
5. The method of claim 4, wherein the tracer fluid is helium.
6. The method of claim 4, wherein the flow fluid is air.

7. The method of claim 1, further comprising monitoring for the presence of the tracer fluid in the flow fluid exiting from the exit point prior to inserting the probe into the exit point.
8. The method of claim 7, wherein the tracer fluid is helium.
9. The method of claim 7, wherein the flow fluid is air.
10. An apparatus for locating a fluid leak in a fuel cell stack, the apparatus comprising:
 - a) a supply system for:
 - i) pressurizing a first fluid stream passage with a tracer fluid,
 - ii) introducing a flow fluid to a second fluid stream passage, and
 - iii) maintaining a substantially constant flow of the flow fluid through the second fluid stream passage toward an exit point of the fuel cell stack;
 - b) a probe, adapted to monitor for the presence of the tracer fluid in the flow fluid; and
 - c) means for:
 - i) inserting the probe into the exit point, and
 - ii) moving the probe through the second fluid stream passage.
11. The apparatus of claim 10, wherein the tracer fluid is helium.
12. The apparatus of claim 11, further comprising a fuel cell stack compressor adapted to place the fuel cell stack in a state of compression similar to what it would be in during operation of the fuel cell stack.

13. The apparatus of claim 10, wherein the flow fluid is air.
14. The apparatus of claim 13, further comprising a fuel cell stack compressor adapted to place the fuel cell stack in a state of compression similar to what it would be in during operation of the fuel cell stack.